

APRIL/MAY 2025

**23USMB43 — VACCINE TECHNOLOGY
(SEC VI)**

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Name the factors influencing immunogenicity.
2. Distinguish between natural and artificial immunity.
3. Explain the mode of action of the cholera vaccine.
4. Explain any two bacterial and parasitic vaccine examples with their target diseases.
5. Define an adjuvant.
6. List out the basic composition of a peptide vaccine.
7. Define rational vaccine design.
8. List out the challenges in rational vaccine design



9. What is the role of WHO in vaccine regulation?
10. Name the regulatory agencies responsible for vaccine approval.

SECTION B — (5 × 5 = 25 marks)

Answer ALL the questions.

11. (a) Discuss the contributions of Louis Pasteur and Jonas Salk to vaccine development.

Or

- (b) Outline the structure and function of an epitope.

12. (a) Compare and contrast live attenuated and killed vaccines with examples.

Or

- (b) Summarize the preparation of diphtheria toxoid vaccine.

13. (a) Analyze the importance of reverse vaccinology in modern vaccine design.

Or

- (b) Discuss the conjugate vaccines.

14. (a) Explain the T-cell expression cloning and its role in identifying vaccine targets.

Or

- (b) Discuss the different strategies for antigen identification in vaccine development.

15. (a) Discuss the large-scale production process of vaccines and its commercialization.

Or

- (b) Illustrate the ethical considerations in vaccine testing on animals.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss in detail about the Major Histocompatibility Complex.

17. Explain in detail about the hepatitis A and B vaccines.

18. Elaborate about the recombinant DNA vaccines and protein-based vaccines.

19. Elaborate on the process of antigen identification and delivery in rational vaccine design.

20. Discuss the regulation and testing of vaccines, including preclinical and clinical evaluation.

